

REMARKS

Claims 1-29 are pending in this application, as amended. Applicants have amended claims 1-15, 17-19 and 21-23 to more particularly point out and distinctly claim the invention. Claims 25-29 have been added. Support for new claims 25-29 can be found in the language of original claims including claims 1, 15, 19, 21 and 23 and in the Specification in paragraphs [0024]-[0029]. Accordingly, no new matter has been added.

Claim Rejections Under 35 U.S.C. § 102(b)

Rejection – Claims 1-6, 15-16 and 19-24

Claims 1-6, 15-16 and 19-24 have been rejected under 35 U.S.C. § 102(b) as being anticipated by Le Vantine, U.S. Patent No. 4,496,375. The Examiner takes the position that Le Vantine discloses an ionizer apparatus and a method of removing ions wherein the improvement includes a filter comprising a metal screen being electrically coupled to ground and positioned over the air inlet. The Examiner further takes the position with regards to claims 4-6 that Le Vantine also discloses a filter comprising a metal screen that is electrically coupled to a DC voltage source and is positioned over the air inlet.

Applicants respectfully traverse the rejection of claims 1-6, 15-16 and 19-24.

Present Invention

The present invention is directed to an improved bipolar air ionizer apparatus having an air inlet, a high voltage source, a first electrode electrically connected to the high voltage source and configured to generate positive polarity ions, a second electrode electrically connected to the high voltage source and configured to generate negative polarity ions, an air outlet and an air mover for causing air to flow into the bipolar air ionizer through the air inlet, around the electrodes and out of the bipolar air ionizer through the air outlet. The improvement includes a foraminous filter comprising an electrically conductive material. The filter is electrically coupled to at least one of a voltage source and ground. The filter is positioned over at least one of the air inlet, the air outlet and the electrodes, such that air flowing into the air inlet, air flowing out of the air outlet or air flowing past the electrodes flows through the filter.

The present invention is also directed to a method of removing ions from air flowing into a bipolar air ionizer having an air inlet, a high voltage source, a first electrode electrically connected to the high voltage source and configured to generate positive polarity ions, a second electrode electrically connected to the high voltage source and configured to generate negative polarity ions, an air outlet and an air mover for causing air to flow into the bipolar air ionizer through the air inlet, around the electrodes and out of the bipolar air ionizer through the air outlet. The method includes the steps of placing a foraminous filter comprising an electrically conductive material over the air inlet and coupling the filter to one of a voltage source and ground.

Applied Reference – La Vantine

La Vantine discloses an air cleaning device including an electrostatic apparatus which removes particulates from the air by causing them to be precipitated on an electrically charged grid having a positive polarity. The device shown in Fig. 1 includes a dielectric conduit structure 20, open at both ends. One end is the air inlet 22 and the other is the air outlet 24. Three sets of electrically charged elements 23, 25, 29 are positioned within the conduit 20, including, in order, a first grid structure 23 maintained at a high negative electrical potential, a needle electrode 25 also maintained at a high negative electrical potential, and a second grid structure 29 maintained at a high positive potential. The air molecules and particulates 11 are charged negatively by the needle electrode 25 and are forced away from the negatively charged first grid 23 structure and drawn toward the positively charged second grid structure 29, by electrostatic forces, causing the air to move through the conduit 20. The negatively charged particulates 16 are attracted to and precipitated on the second grid structure 29.

An alternate embodiment is shown in FIG. 4 which utilizes two stages of ion pumping in series that are each nearly identical to the single stage ion “pumper” shown in Fig. 1. A hollow cylindrical structure 60 is mounted on a base 76. A first stage consists of negative grid 63, negative electrode 65 and positive grid 69. Molecule or particulate 54 enters the device through the upper open end 62 of cylinder 60 as indicated by direction arrows 55. Passing through the negative grid 63, the molecule or particulate 54 receives a negative charge directly or indirectly from negative electrode 65, as indicated by charged molecule or particulate 57, and is

propelled in direction 56 toward positive grid 69 where it gives up its charge and proceeds onward through the cylinder 60, as indicated by arrows 58. Molecule or particulate 59 proceeds through grounded screen 68 which serves to electrically separate the first propelling stage just described, from the second propelling stage below. The second stage is identical to the first consisting of negative grid 70, negative electrode 75 and positive grid 72. The molecules or particulates are negatively charged by the electrode and propelled toward the positive grid, as above, and exit the apparatus through openings 74 as indicated by arrows 79. The propulsion of the first stage is augmented by the propulsion from the second stage. In the embodiment shown in FIG. 4, particulates are collected on both positive grids 69 and 72.

Claim 1

Claim 1, as amended, recites, *inter alia*:

a bipolar air ionizer apparatus comprising an air inlet, a high voltage source, a first electrode electrically connected to the high voltage source and configured to generate positive polarity ions, a second electrode electrically connected to the high voltage source and configured to generate negative polarity ions, an air outlet and an air mover for causing air to flow into the bipolar air ionizer through the air inlet, around the electrodes and out of the bipolar air ionizer through the air outlet, wherein the improvement comprises:

a foraminous filter comprising an electrically conductive material, the filter being electrically coupled to at least one of a voltage source and ground, the filter being positioned over at least one of the air inlet, the air outlet and the electrodes, such that air flowing into the air inlet, air flowing out of the air outlet of air flowing past the electrodes flows through the filter.

La Vantine fails to disclose, teach or suggest a bipolar air ionizer apparatus having a first electrode electrically connected to the high voltage source and configured to generate positive polarity ions and a second electrode electrically connected to the high voltage source and configured to generate negative polarity ions and that the apparatus includes a foraminous filter comprising an electrically conductive material, the filter being electrically

coupled to at least one of a voltage source and ground, the filter being positioned over at least one of the air inlet, the air outlet and the electrodes.

La Vantine merely discloses an electrostatic air cleaning device having only a negative electrode (25, 65, or 75) in combination with a negatively charged grid (23, 63 and/or 70) and a positively charged grid (29, 69 and/or 72). The negative electrode (25, 65, or 75) is intended to negatively charge particulate matter in the air and the negatively charged grid (23, 63 and/or 70) is intended to cause the negatively charged particulate matter to be repulsed while the positively charged grid (29, 69 and/or 72) is intended to cause the particulate matter to be attracted. The negatively charged and positively charged grids of Le Vantine do not generate ions. The positively charged grid (29, 69 and/or 72) is intended to attract and remove particulate matter from the air, not to balance ions in the air stream.

A claim is anticipated under 35 U.S.C. § 102 only if each and every element as set forth in the claim is found expressly or inherently described in a single prior art reference. MPEP § 2131. Furthermore, “the identical invention must be shown in as complete detail as is contained in the... claim.” MPEP § 2131.

As discussed above, La Vantine does not disclose, teach or suggest a bipolar air ionizer apparatus having a first electrode electrically connected to the high voltage source and configured to generate positive polarity ions and a second electrode electrically connected to the high voltage source and configured to generate negative polarity ions and that the apparatus includes a foraminous filter comprising an electrically conductive material, the filter being electrically coupled to at least one of a voltage source and ground, the filter being positioned over at least one of the air inlet, the air outlet and the electrodes, as claimed in amended claim 1. It is, therefore, respectfully submitted that claim 1, as amended, is not anticipated by La Vantine. Accordingly, it is respectfully requested that the rejection under 35 U.S.C. § 102(b) of claim 1 and dependent claims 2-6 should be withdrawn.

Claim 15

Claim 15, as amended, reads:

a method of removing ions from air flowing into a bipolar air ionizer having an air inlet, a high voltage source, a first electrode electrically connected to the high voltage source and configured to generate positive polarity ions, a second electrode electrically connected to the high voltage source and configured to generate negative polarity ions, an air outlet and an air mover for causing air to flow into the bipolar air ionizer through the air inlet, around the electrodes and out of the bipolar air ionizer through the air outlet, the method comprising the steps of:

placing a foraminous filter comprising an electrically conductive material over the air inlet; and
coupling the filter to one of a voltage source and ground.

La Vantine fails to disclose, teach or suggest a method of removing ions from air flowing into a bipolar air ionizer apparatus having a first electrode electrically connected to the high voltage source and configured to generate positive polarity ions and a second electrode electrically connected to the high voltage source and configured to generate negative polarity ions and that the method comprises the steps of placing a foraminous filter over the air inlet and coupling the filter to one of a voltage source and ground, as claimed in amended claim 15. It is, therefore, respectfully submitted that claim 15, as amended, is not anticipated by La Vantine for all of the reasons cited above regarding claim 1. Accordingly, it is respectfully requested that the rejection under 35 U.S.C. § 102(b) of claim 15 and dependent claim 16 should be withdrawn.

Claim 19

Claim 19, as amended, reads:

a method of removing ions from air flowing into a bipolar air ionizer having an air inlet, a high voltage source, a first electrode electrically connected to the high voltage source and configured to generate positive polarity ions, a second electrode electrically connected to the high voltage source and configured to generate negative polarity ions, an air outlet and an air mover for causing air to flow into the bipolar air ionizer through the air inlet, around the electrodes and out of the bipolar air ionizer through the air outlet, the method comprising the steps of:

placing a foraminous filter comprising an electrically conductive material around the electrodes; and

coupling the filter to one of a voltage source and ground.

La Vantine fails to disclose, teach or suggest a method of removing ions from air flowing into a bipolar air ionizer apparatus having a first electrode electrically connected to the high voltage source and configured to generate positive polarity ions and a second electrode electrically connected to the high voltage source and configured to generate negative polarity ions and that the method comprises the steps of placing a foraminous filter around the electrodes and coupling the filter to one of a voltage source and ground, as claimed in amended claim 19. It is, therefore, respectfully submitted that claim 19, as amended, is not anticipated by La Vantine for all of the reasons cited above regarding claim 1. Accordingly, it is respectfully requested that the rejection under 35 U.S.C. § 102(b) of claim 19 and dependent claim 20 should be withdrawn.

Claim 21

Claim 21, as amended, recites, *inter alia*:

a bipolar air ionizer apparatus comprising an air inlet, a high voltage source, a first electrode electrically connected to the high voltage source and configured to generate positive polarity ions, a second electrode electrically connected to the high voltage source and configured to generate negative polarity ions, an air outlet and an air mover for causing air to flow into the bipolar air ionizer through the air inlet, around the electrodes and out of the bipolar air ionizer through the air outlet, wherein the improvement comprises:

a foraminous filter comprising an electrically conductive material, the filter being electrically coupled to one of a voltage source and ground, the filter being positioned on an interior surface of the bipolar air ionizer apparatus, such that at least a portion of the air flowing past the electrodes engages the filter.

La Vantine fails to disclose, teach or suggest a bipolar air ionizer apparatus having a first electrode electrically connected to the high voltage source and configured to

generate positive polarity ions and a second electrode electrically connected to the high voltage source and configured to generate negative polarity ions and that the apparatus includes a foraminous filter being electrically coupled to one of a voltage source and ground, as claimed in amended claim 21. It is, therefore, respectfully submitted that claim 21, as amended, is not anticipated by La Vantine for all of the reasons cited above regarding claim 1. Accordingly, it is respectfully requested that the rejection under 35 U.S.C. § 102(b) of claim 21 and dependent claim 22 should be withdrawn.

Claim 23

Claim 23, as amended, reads:

a method of removing unwanted ions from air flowing out of a bipolar air ionizer, the bipolar air ionizer having an air inlet, a high voltage source, a first electrode electrically connected to the high voltage source and configured to generate positive polarity ions, a second electrode electrically connected to the high voltage source and configured to generate negative polarity ions, an air outlet and an air mover for causing air to flow into the bipolar air ionizer through the air inlet, around the electrodes and out of the bipolar air ionizer through the air outlet, the method comprising the steps of:

placing a foraminous filter comprising an electrically conductive material over an interior surface of the bipolar air ionizer apparatus proximate to the electrodes; and

coupling the filter to one of a voltage source and ground.

La Vantine fails to disclose, teach or suggest a method of removing ions from air flowing into a bipolar air ionizer apparatus having a first electrode electrically connected to the high voltage source and configured to generate positive polarity ions and a second electrode electrically connected to the high voltage source and configured to generate negative polarity ions and that the method comprises the steps of placing a foraminous filter around the electrodes and coupling the filter to one of a voltage source and ground, as claimed in amended claim 23. It is, therefore, respectfully submitted that claim 23, as amended, is not anticipated by La Vantine

for all of the reasons cited above regarding claim 1. Accordingly, it is respectfully requested that the rejection under 35 U.S.C. § 102(b) of claim 23 and dependent claim 24 should be withdrawn.

Rejection – Claims 1, 7-8, and 17-18

Claims 1, 7-8, and 17-18 have been rejected under 35 U.S.C. § 102(b) as being anticipated by Larigaldie *et al.*, U.S. Patent No. 4,864,459 (hereinafter, “Larigaldie”). The Examiner takes the position that Larigaldie discloses an ionizer apparatus and a method of removing ions wherein the improvement includes a filter comprising a metal screen being electrically coupled to ground and positioned over the air outlet.

Applicants respectfully traverse the rejection of claims 1, 7-8, and 17-18.

Applied Reference - Larigaldie

Larigaldie discloses a laminar flow hood 1 with a static electricity eliminator 2. The cabinet comprises two side walls 11 and 12, a rear wall 13, and is covered by a ceiling 10. Substantially halfway up the cabinet there is a work surface 15. Block 18 represents a hood for producing a laminar flow of filtered air which enters into the cabinet through its ceiling 10 and moves down towards the work surface 15. The laminar flow hood 1 provides for the addition of the electrostatic electricity eliminator device 2 and its associated high-tension electronics 3 being added to the hood.

The static electricity eliminator device 2 includes a rigid frame 20 having a first set of wires 21-1 to 21-n which are interconnected at 23 and a second set of wires 22-1 to 22-n which are interconnected at 24. The wires in the two sets 21-1-21-n, 22-1-22-n are parallel, coplanar, extend taut over the rigid frame, and are equidistant not only within each set but also between the two sets. The connection 23 common to all the wires of the first set is connected to a terminal 25. The connection 24 common to all the wires of the second set is connected to a terminal 26. The two terminals 25, 26 are connected to the electronics 3 which produces an alternating high tension with a peak amplitude of between 4 KV and 10 KV. The electronics 3 comprises a power supply 30. The output from the power supply 30 is applied to the primary winding 31 of a transformer 32. The secondary winding 33 of the transformer has terminals 35 and 36. The terminal 35 is connected to the terminal 25 either via a capacitor 38 or else directly,

and the terminal 36 is connected to the terminal 26 either directly, or else via a capacitor 39. Thus, there is an alternately-charged grid of bare wires (the second set of wires 22-1-22-n) and an alternately-charged grid of insulated wires (the first set of wires 21-1-21-n) which provides the static electricity elimination functions.

Claim 1

Larigaldie fails to disclose, teach or suggest a bipolar air ionizer apparatus having a first electrode electrically connected to the high voltage source and configured to generate positive polarity ions and a second electrode electrically connected to the high voltage source and configured to generate negative polarity ions and that the apparatus includes a foraminous filter comprising an electrically conductive material, the filter being electrically coupled to at least one of a voltage source and ground, the filter being positioned over at least one of the air inlet, the air outlet and the electrodes.

Larigaldie merely discloses a static electricity eliminating device with an alternately-charged grid of bare wires (the second set of wires 22-1-22-n) and an alternately-charged grid of insulated wires (the first set of wires 21-1-21-n). As discussed above, Larigaldie does not disclose, teach or suggest a bipolar air ionizer apparatus having a first electrode electrically connected to the high voltage source and configured to generate positive polarity ions and a second electrode electrically connected to the high voltage source and configured to generate negative polarity ions and that the apparatus includes a foraminous filter comprising an electrically conductive material, the filter being electrically coupled to at least one of a voltage source and ground, the filter being positioned over at least one of the air inlet, the air outlet and the electrodes, as claimed in amended claim 1. It is, therefore, respectfully submitted that claim 1, as amended, is not anticipated by Larigaldie. Accordingly, it is respectfully requested that the rejection under 35 U.S.C. § 102(b) of claim 1 and dependent claims 7-8 should be withdrawn.

Claim 17

Claim 17, as amended, reads:

a method for removing unwanted ions and ionization noise from ionized air flowing out of a bipolar air ionizer, the bipolar air ionizer having an air inlet, a high voltage source, a first electrode

electrically connected to the high voltage source and configured to generate positive polarity ions, a second electrode electrically connected to the high voltage source and configured to generate negative polarity ions, an air outlet and an air mover for causing air to flow into the bipolar air ionizer through the air inlet, around the electrodes and out of the bipolar air ionizer through the air outlet, the method comprising the steps of:

placing a foraminous filter comprising an electrically conductive material over the air outlet; and

coupling the filter to one of a voltage source and ground.

Larigaldie fails to disclose, teach or suggest a method of removing ions from air flowing into a bipolar air ionizer apparatus having a first electrode electrically connected to the high voltage source and configured to generate positive polarity ions and a second electrode electrically connected to the high voltage source and configured to generate negative polarity ions and that the method comprises the steps of placing a foraminous filter comprising an electrically conductive material over the air outlet and coupling the filter to one of a voltage source and ground, as claimed in amended claim 17. It is, therefore, respectfully submitted that claim 17, as amended, is not anticipated by Larigaldie for all of the reasons cited above regarding claim 1. Accordingly, it is respectfully requested that the rejection under 35 U.S.C. § 102(b) of claim 17 and dependent claim 18 should be withdrawn.

Rejection – Claims 9-12

Claims 9-12 have been rejected under 35 U.S.C. § 102(b) as being anticipated by Rump *et al.*, U.S. Patent No. 6,375,714 (hereinafter, “Rump”). The Examiner takes the position that Rump discloses an ionizer apparatus wherein the improvement includes a filter comprising a metal screen being electrically coupled to a DC feedback voltage and positioned and positioned over the air outlet for sensing ion content.

Applicants respectfully traverse the rejection of claims 9-12.

Applied Reference - Rump

Rump discloses an air ionizer for producing active oxygen ions in the air for improved air quality. The air ionizer is coupled to grid-like, flat structures 12.2, 12.3, 12.4 that are disposed inside of an insulated frame 12.1, which forms a flow channel for air fed through. The grid-like, flat structures 12.2, 12.3, 12.4 are planar, grid like bodies and exhibit electrically conducting surfaces. The bodies 12.2, 12.3, 12.4 are disposed planar parallel on top of each other in the air stream and are contacted electrically such that they exhibit in each case a changing electrical potential. The material of the grid like flat bodies 12.2, 12.3, 12.4 is wire fabric, punched metal parts or the like electrically conducting material. The production rate of the ions is purportedly increased by a construction of electrically conducting flat bodies 13.1 by the situation that the electrically conducting flat bodies, or the flat bodies 12.2, 12.3, 12.4 which are constructed similar to barbed wire and are provided with numerous needle shaped or tooth shaped projections 13.2, at which projections 13.2 the corona effect occurs.

Claim 1

Rump fails to disclose, teach or suggest a bipolar air ionizer apparatus having a first electrode electrically connected to the high voltage source and configured to generate positive polarity ions and a second electrode electrically connected to the high voltage source and configured to generate negative polarity ions and that the apparatus also includes a foraminous filter comprising an electrically conductive material, the filter being electrically coupled to at least one of a voltage source and ground, the filter being positioned over at least one of the air inlet, the air outlet and the electrodes. Furthermore, Rump fails to disclose teach or suggest a bipolar air ionizer apparatus that includes an air mover for causing air to flow into the bipolar air ionizer through the air inlet, around the electrodes and out of the bipolar air ionizer through the air outlet.

Rump merely discloses an air ionizer for producing active oxygen ions in the air for improved air quality and that the air ionizer is coupled to grid-like, flat structures 12.2, 12.3, 12.4. As discussed above, Rump does not disclose, teach or suggest a bipolar air ionizer apparatus having a first electrode electrically connected to the high voltage source and configured to generate positive polarity ions and a second electrode electrically connected to the

high voltage source and configured to generate negative polarity ions and that the apparatus also includes a foraminous filter comprising an electrically conductive material, the filter being electrically coupled to at least one of a voltage source and ground, the filter being positioned over at least one of the air inlet, the air outlet and the electrodes, as claimed in amended claim 1. Furthermore, Rump also fails to disclose teach or suggest a bipolar air ionizer apparatus that includes an air mover for causing air to flow into the bipolar air ionizer through the air inlet, around the electrodes and out of the bipolar air ionizer through the air outlet, as also claimed in amended claim 1. It is, therefore, respectfully submitted that claim 1, as amended, is not anticipated by Rump because each and every element of claim 1 is not disclosed by Rump and the elements are not arranged as required by claim 1. Since dependent claims 9-12 depend upon independent claim 1, it is respectfully submitted that dependent claims 9-12 are also not anticipated by Rump for the same reasons. Accordingly, it is respectfully requested that the rejection under 35 U.S.C. § 102(b) of dependent claims 9-12 should be withdrawn.

Claim Rejections Under 35 U.S.C. § 103(a)

Claims 13-14 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Le Vantine in view of Pui *et al.*, U.S. Patent No. 5,973,904 (hereinafter, “Pui”). The Examiner takes the position that Le Vantine discloses a filter comprising a metal screen being electrically coupled to a DC voltage source and positioned over the air inlet. The Examiner acknowledges that Le Vantine does not disclose that the electrode is coupled to an AC power source, but the Examiner takes the position that Pui discloses an air ionizer in which the electrodes are supplied with AC current and that it would have been obvious to utilize AC current to apply to the electrodes.

Applicants respectfully traverse the rejection of claims 13-14.

Applied Reference - Pui

Pui discloses a method of charging aerosol particles in a particle charging apparatus. The unipolar particle charging apparatus 10 (Figs. 1-3) includes an elongated charger housing 12 having a longitudinal axis 11 extending therethrough. The charger housing 12 includes a tubular housing member 14, a first annular end member 16 and a second annular end

member 18. The housing 12 is constructed of non-conducting material. An inlet 22 is defined in the first end member 16 of the charger housing 12 for receiving a stream 20 of aerosol particles and an outlet 26 is defined in the second end member 18 of the charger housing 12 for allowing the exit of a stream 24 of aerosol particles. The inlet 22 is defined by an annular inlet member 23 that is concentric with the first end member 16 about the longitudinal axis 11. A portion of the annular inlet member 23 extends beyond the opening 25 defined in the first end member 16 to facilitate connection of the apparatus 10 to equipment providing the stream 20 of aerosol particles. A portion 27 of the annular inlet member 23 extends to the interior of the first end member 16 for defining an annular cavity 34 with a portion of the first end 16 and an annular metal screen 36. The cavity 34 is for receiving air or a gas 28 through air inlet 30 defined in the first end 16. The portion 27 of the annular inlet member 23 is tapered to promote movement of the air or gas 28 in the cavity 34 towards the metal screen 36 (e.g., a low porosity screen, sintered metal, perforated metal, or the like) such that an annular clean air sheath 52 is provided between the stream of aerosol particles 50 in the charging zone 13 and the charger housing 12.

An indented annular slot 63 in tubular housing member 14 is positioned in proximity to the inlet 22 of the charger housing 12 along the inner surface 47 of the tubular housing member 14. A ring electrode 48 is positioned between the inlet 22 of the charger housing 12 and the ion source 38. The ion source 38 as described is a radioactive source, but the disclosure also indicates that the ion source 38 may also be a corona discharge electrode. Electrodes 46 and 48 are used to set up the confined uniform electric field. The ring electrode 48 is electrically connected to the annular metal screen 36. With the electrode 48 grounded and the electrodes 46 being operable, the confined uniform electric field causes ions of one polarity to be pushed towards the electrode 48/screen 36 in a relatively short section of charging zone 13 compared to the remaining portion of the charging zone 13. Such removal of ions of one polarity allows a stream of unipolar ions to be directed to flow into the charging zone 13 by the confined electric field to collide with the parallel stream of aerosol particles flowing from the inlet 22 to the outlet 26 causing aerosol particles to be charged.

Claim 25

Claim 13 has been amended to depend from new independent claim 25 and claim 14 still depends upon claim 13. New independent claim 25 recites:

a bipolar air ionizer apparatus comprising an air inlet, a high voltage source having a high voltage alternating current power supply, an electrode electrically connected to the high voltage alternating current power supply and configured to alternately generate positive polarity ions and negative polarity ions, an air outlet and an air mover for causing air to flow into the bipolar air ionizer through the air inlet, around the electrode and out of the bipolar air ionizer through the air outlet, wherein the improvement comprises:

a foraminous filter comprising an electrically conductive material, the filter being electrically coupled to at least one of a voltage source and ground, the filter being positioned over at least one of the air inlet, the air outlet and the electrode, such that air flowing into the air inlet, air flowing out of the air outlet of air flowing past the electrode flows through the filter.

La Vantine fails to disclose, teach or suggest a bipolar air ionizer apparatus having an electrode electrically connected to the high voltage alternating current power supply and configured to alternately generate positive polarity ions and negative polarity ions, and that the apparatus includes a foraminous filter comprising an electrically conductive material, the filter being electrically coupled to at least one of a voltage source and ground, the filter being positioned over at least one of the air inlet, the air outlet and the electrodes. Pui does not make up for the deficiencies of La Vantine.

In order to establish *prima facie* obviousness of a claimed invention, all the claimed limitations must be taught or suggested by the prior art. MPEP § 2143.03. Further, the mere fact that the prior art *could* be modified in the manner proposed by the Examiner does not make the modification obvious unless the prior art suggests the desirability of the modification.

As mentioned above regarding claim 1, La Vantine merely discloses an electrostatic air cleaning device having only a negative electrode (25, 65, or 75) in combination

with a negatively charged grid (23, 63 and/or 70) and a positively charged grid (29, 69 and/or 72). The negative electrode (25, 65, or 75) is intended to negatively charge particulate matter in the air and the negatively charged grid (23, 63 and/or 70) is intended to cause the negatively charged particulate matter to be repulsed while the positively charged grid (29, 69 and/or 72) is intended to cause the particulate matter to be attracted. Pui merely discloses a unipolar particle charging apparatus 10 that has a radioactive ion generating source 38. While Pui contemplates using a corona discharge electrode instead of a radioactive ion generating source 38, there is no clear teaching that such a substituted corona discharge electrode would be connected to a high voltage alternating current power supply as required by independent claim 25 of the present application. Referring to the only detailed circuit diagram of Pui, Fig. 4 shows a power source 104 connected to ring electrodes which "create an electrical field" but which do not generate ions. The ion generating source 38 is not connected to the power source 104.

Furthermore, modifying the apparatus of Pui to include a corona discharge electrode 38 that is connected to a high voltage alternating current power supply would teach away from Pui in that Pui is a unipolar particle charging apparatus. The embodiments contemplated at col. 10, lines 12-21 of Pui make reference to applying alternating current to the electrodes which control the electric field and do not make reference to generating ions of both polarities, as suggested by the Examiner.

As discussed above, La Vantine and La Vantine modified by Pui fail to disclose, teach or suggest all of the claimed limitations of independent claim 25, and therefore, fail to disclose, teach or suggest all the claim limitations of dependent claims 13 and 14 which depends upon claim 25. It is therefore respectfully submitted that because La Vantine modified by Pui fails to disclose, teach or suggest a bipolar air ionizer apparatus having an electrode electrically connected to the high voltage alternating current power supply and configured to alternately generate positive polarity ions and negative polarity ions, and that the apparatus includes a foraminous filter comprising an electrically conductive material, the filter being electrically coupled to at least one of a voltage source and ground, the filter being positioned over at least one of the air inlet, the air outlet and the electrodes, as claimed in amended claim 25 and dependent claims 13-14, claims 13-14 are not *prima facie* obvious in view of La Vantine

modified by Pui. Accordingly, it is respectfully requested that the rejection of claims 13-14 under 35 U.S.C. § 103(a) should be withdrawn.

CONCLUSION

In view of the foregoing Amendment and discussion, it is respectfully submitted that the present application, including claims 1-29, is in condition for allowance and such action is respectfully requested.

Respectfully submitted,

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